

REMARKS

Claims 1-5 and 7-41 are all the claims pending in the application. Reconsideration and allowance of all the claims are respectfully requested in view of the following remarks.

Specification

The Examiner objected to the specification as failing to provide proper antecedent basis for the claimed subject matter. Specifically, the Examiner asserted that the specification fails to provide antecedent basis for the “projected area of said discontinuous grooves onto an area of said film plane is not larger than 10%.”, as set forth in claim 8. This recitation was presented in originally filed claim 8 and, therefore, is a part of the specification as originally filed. Accordingly, Applicants have amended the specification—at page 24—to set forth this feature.

Claim Rejections - 35 U.S.C. § 102

The Examiner rejected claims 1, 4, and 41, under §102(f) because the Applicant did not invent the claimed subject matter. Specifically, the Examiner asserts that Japanese 2000-147499 (hereinafter JP ‘499) discloses the invention as set forth in claims 1, 4, and 41. Further, the Examiner notes that JP ‘499 issued to a different set of inventors than that of the present application. Applicants respectfully traverse this rejection because JP ‘499 fails to disclose every element as set forth in Applicants’ claims.

As seen from the English abstract of JP ‘449, this reference does not disclose every feature of the optical film according to the invention. Specifically, JP ‘499 fails to disclose at least a projected area of flat surfaces each having an inclination angle of not larger than 5 degrees with respect to the film plane is not smaller than 10 times as large as a projected area of the slopes each having an inclination angle of not smaller than 35 degrees with respect to the film plane.

Further, if the Examiner continues to maintain this rejection, Applicants respectfully request that he provide a full translation of JP ‘449. That is, the Board of Patent Appeals and Interferences has stated that an Examiner should not cite and rely only on an abstract of a foreign

language document but, instead, should provide an English translation of the underlying document:¹

When an examiner cites and relies only on an abstract, the applicant may wish to obtain a copy of the underlying document and submit a copy to the examiner when responding to a rejection relying on an abstract. In the event a reference is in a foreign language, if the applicant does not wish to expend resources to obtain a translation, the applicant may wish to request the examiner to supply a translation. If a translation is not supplied by the examiner, the applicant may wish to consider seeking supervisory relief by way of a petition (37 CFR § 1.181) to have the examiner directed to obtain and supply a translation. In the past, when neither the examiner nor the applicant rely on the underlying article, the board has often expended the resources necessary to obtain a copy of the underlying scientific article, as well as translations thereof. When it did so, however, the burden of examining the application fell on the board in the first instance. Moreover, to the extent that the board relies on parts of a translation not previously provided to an applicant, any affirmance generally has to be a new ground of rejection under 37 CFR §1.196(b)—which can result in further prosecution.

In accordance with the Board's directive in *Gavin*, Applicants respectfully request that the Examiner provide an English translation of JP '499.

Claim Rejections - 35 U.S.C. § 103

The Examiner rejected claims 1, 3, 4, 8-10, 39, and 41, under §103(a) as being unpatentable over US Patent 5,461,547 to Ciupke et al. (hereinafter Ciupke) in view of EP 867 747 to Bao (hereinafter Bao). Ciupke is no more relevant than US Patent 5,390,276 to Tai which the Examiner previously applied in combination with Bao. Applicants respectfully traverse this rejection because the references fail to teach or suggest all the elements as set forth in Applicants' claims.

Both Ciupke and Bao utilize light transmission in the inside of the light pipe. See Fig 2 in Ciupke and Fig. 1 in Bao. In this type of system, a panel ("LCD 12" in Ciupke and "0" in Bao) is disposed on the light pipe or backlighting system ("11" in Ciupke and "20" in Bao).

¹ *Ex parte Gavin*, 62 USPQ2d 1680 (Bd. Pat. App. & Int. 2001) (unpublished).

Therefore, an increase of total thickness is not avoidable. In contrast, according to one embodiment of the present invention, light is transmitted inside of the liquid crystal panel portion in the LCD system to which the optical film is adopted. The transparent film in the optical film according to one embodiment of the present invention emits the light by its prismatic structure, it is not intended to transmit light in its internal space.

Thus, a transparent film would not be adopted in any combination of Ciupke and Bao because the light pipe in those references plays a role of not only emission of light but also transmission of light.

More specifically, turning to the language of the claims, Applicants have the following additional comments.

Claim 1 sets forth an optical film comprising a transparent film, an adhesive layer on one surface of the transparent film and having a refractive index different by 0.1 or less from a refractive index of a layer of the transparent film, and a repetitive prismatic structure provided on the other surface of the transparent film.

For example, as shown in Fig. 1H, one embodiment of the present invention comprises an optical film 1 comprising a transparent film 11, an adhesive layer 12 on one surface of the transparent film and having a refractive index different by 0.1 or less from a refractive index of a layer 11A of the transparent film 11, and a repetitive prismatic structure 13 provided on the other surface of the transparent film 11. As set forth in the specification, the transparent film has a thickness on the order of micrometers so that a display device made therefrom is small in thickness.² The optical film of the present invention was made to replace the light pipes and/or light diffusing plates of the prior art, because such structures have a thickness on the order of millimeters, which makes it hard to reduce the thickness and weight of a display device.³

In contrast to that set forth in claim 1, Bao and Ciupke each disclose light pipes and/or light guiding plates having a thickness on the order of millimeters. Specifically, Bao teaches a

² Specification at page 29, lines 20-24.

³ Specification at the paragraph bridging pages 1 and 2.

light guiding plate 20 having a thickness of about 3 mm.⁴ Similarly, Ciupke teaches a light guide 11 having a thickness of one millimeter, wherein the thickness is the same as, or greater than, the dimension of the light source.⁵ Therefore, for the sake of argument, even assuming one of ordinary skill in the art were motivated to combine Bao and Ciupke as suggested by the Examiner, any such combination would still not teach or suggest a transparent film, as set forth in claim 1.

The Examiner asserts that it would have been a matter of design choice to select a light guide having a thickness on the order of micrometers.⁶ Contrary to the Examiner's assertion, however, Ciupke teaches that the thickness of the light guide is as thick as, or greater than, the thickness of the light source. This exemplifies the problems in the prior art, namely, that a thin display cannot be made due to the thickness of the light source and its placement relative to an equally thick light guide. The presently claimed invention overcomes these problems in the prior art by providing not a light guide for transmitting light therethrough, but an optical film for changing the path of light incident thereon.

Moreover, according to the present invention, the light emitted from the light source travels through the whole of a liquid crystal panel as shown in Fig. 7, for example. In other words, the liquid crystal panel plays a role of transmitting light. The film does not play a role of transmitting the light over the whole area of the device.

On the other hand, according to the prior art, a light source is attached on the side of the light pipe, and the light pipe plays a role of transmitting the light emitted from the light source. Accordingly, the light pipe is required to have a certain thickness to accept the light from the light source. Specifically, assuming that light amount I to be made incident in the light pipe is generally represented by the following assuming that the light amount is I_0 when the thickness T of the light pipe is equal to the diameter D of the light source.

⁴ Bao at col. 14, lines 19-23.

⁵ Ciupke at col. 2, lines 56-64.

⁶ Office Action at page 4, lines 13-16.

$$I = I_0 \times T/D$$

Thus, it is almost meaningless to adapt a thin film as a light pipe to the light source because it cannot allow the light to enter the light pipe itself. At the filing of this application, the diameter of the light source was about 1.8 mm.

Although Ciupke does not clearly discuss the specific thickness value of the light pipe, it is not obvious to one of ordinary skill in the art to adopt the thickness of not larger than 300 μm to the light pipe of the Ciupke. Further, Bao discloses a thickness of 3.2 mm in the column 20, line 15. This clearly shows the evidence that the plate 20 of Bao is not a film, as set forth in Applicants' claims.

For at least any of the above reasons, Bao and Ciupke fail to render obvious claim 1. Likewise, Bao and Ciupke fail to render obvious dependent claims 3, 4, 8-10, 39, and 41.

The Examiner rejected claims 2 and 11 under §103(a) as being unpatentable over Ciupke in view of Bao, and further in view of JP 11-142618 (hereinafter JP '618). Applicants respectfully traverse this rejection because the references fail to teach or suggest all the elements as set forth in Applicants' claims.

As set forth above, the Examiner's rejection based on Ciupke and Bao is deficient. JP '618 fails to teach or suggest anything that would cure the deficiencies in the Examiner's rejection based on Ciupke and Bao. Therefore, Ciupke, Bao, and JP '618 fail to render obvious Applicants' claims.

The Examiner rejected claims 5, 7, and 40, under §103(a) as being unpatentable over Ciupke in view of Bao, and further in view of US Patent 5,584,556 to Yokoyama et al. (hereinafter Yokoyama). Applicants respectfully traverse this rejection because the references fail to teach or suggest all the elements as set forth in Applicants' claims.

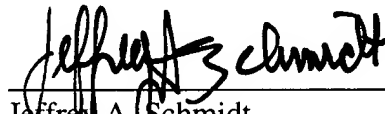
As set forth above, the Examiner's rejection based on Ciupke and Bao is deficient. Yokoyama fails to teach or suggest anything that would cure the deficiencies in the Examiner's rejection based on Ciupke and Bao. Therefore, Ciupke, Bao, and Yokoyama fail to render obvious Applicants' claims.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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PATENT TRADEMARK OFFICE

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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

On page 24, the 1st full paragraph has been amended as follows:

As illustrated in Figs. 2 to 4, the plurality of optical path changing means A are provided so that the ridgelines of the optical path changing means A are parallel to or inclined to the incidence side surface on which light is incident. In this case, the optical path changing means A may be formed so as to be continued from one end to the other end of the optical film 1 as illustrated in Figs. 2 and 3, or may be formed intermittently and discontinuously as illustrated in Fig. 4. When the plurality of optical path changing means A are formed discontinuously, it is preferable from the point of view of efficiency of incidence of the transmission light, efficiency of changing the optical path, etc. that the length of each prismatic structures of a groove or a protrusion along the direction of the incidence side surface is selected to be not smaller than 5 times as large as the depth or height of the prismatic structure. It is further preferable from the point of view of uniform light emission on the optical film that the length is selected to be not larger than 500 μm , particularly in a range of from 10 to 480 μm , more particularly in a range of from 50 to 450 μm . Moreover, it is preferable that a projected area of the discontinuous grooves onto an area of the film plane is not larger than 10%.